

FLUSHING AND DISINFECTION OF WATER MAINS

- A. ALL WATER MAINS SHALL BE DISINFECTED PRIOR TO BEING PLACED IN OPERATION.
- B. PRIOR TO DISINFECTION, ALL WATER MAINS SHALL BE FLUSHED. EACH MAIN SHALL BE FILLED WITH POTABLE WATER TO ELIMINATE AIR POCKETS AND FLUSHED TO REMOVE PARTICULATES. THE FLUSHING VELOCITY IN THE MAIN SHALL NOT BE LESS THAN **3.0 FT/SEC.** ALL VALVES AND HYDRANTS SHALL BE OPERATED DURING THIS OPERATION.
- C. METHODS OF CHLORINE APPLICATION:
 1. CONTINUOUS FEED METHOD - POTABLE WATER SHALL BE INTRODUCED INTO THE MAIN AT A CONSTANT FLOW RATE. CHLORINE SHALL BE ADDED AT A CONSTANT RATE TO THIS FLOW SO THAT THE CHLORINE CONCENTRATION IN THE WATER IN THE MAIN IS AT LEAST 50 MG/L. THE CHLORINATED WATER SHALL REMAIN IN THE MAIN AT LEAST 24 HOURS, AFTER WHICH THE CHLORINE CONCENTRATION IN THE WATER SHALL BE AT LEAST 10 MG/L. ALL VALVES AND APPURTENANCES SHALL BE OPERATED WHILE THE CHLORINATED WATER REMAINS IN THE WATER MAIN.
 2. SLUG METHOD - POTABLE WATER SHALL BE INTRODUCED INTO THE MAIN AT A CONSTANT FLOW RATE. THE WATER SHALL RECEIVE A CHLORINE DOSAGE WHICH WILL RESULT IN A CHLORINE CONCENTRATION OF 100 MG/L IN A "SLUG" OF THE WATER. THE CHLORINE SHALL BE ADDED LONG ENOUGH TO ENSURE THAT ALL PORTIONS OF THE MAIN ARE EXPOSED TO THE 100 MG/L CHLORINE SOLUTION FOR AT LEAST 3 HOURS. THE CHLORINE RESIDUAL SHALL BE CHECKED AT REGULAR INTERVALS NOT TO EXCEED 2,000 FEET TO ENSURE THAT ADEQUATE RESIDUAL IS MAINTAINED. AS THE CHLORINATED WATER PASSES VALVES AND APPURTENANCES, THEY SHALL BE OPERATED TO ENSURE DISINFECTION OF THESE APPURTENANCES.
 3. TABLET METHOD - THIS METHOD SHALL NOT BE USED IF NON-POTABLE WATER OR FOREIGN MATERIALS HAVE ENTERED THE MAIN OR IF THE WATER TEMPERATURE IS BELOW 41F. THE TABLETS SHALL BE PLACED IN EACH SECTION AND IN ALL APPURTENANCES. ENOUGH TABLETS SHALL BE USED TO ENSURE THAT A CHLORINE CONCENTRATION OF 25 MG/L IS PROVIDED IN THE WATER. THEY SHALL BE ATTACHED BY AN ADHESIVE TO THE TOP OF THE PIPE SECTIONS AND CRUSHED OR RUBBED IN ALL APPURTENANCES. THE ADHESIVE SHALL BE ACCEPTABLE TO THE DIVISION. THE VELOCITY OF THE POTABLE WATER IN THE MAIN SHALL BE LESS THAN 1 FT / SEC. THE WATER SHALL THEN REMAIN IN CONTACT WITH THE PIPE FOR 24 HOURS. ALL VALVES AND APPURTENANCES SHALL BE OPERATED WHILE THE CHLORINATED WATER IS IN THE WATERMAIN..
- D. FINAL FLUSHING - AFTER THE REQUIRED RETENTION PERIOD, THE CHLORINATED WATER SHALL BE FLUSHED FROM THE MAIN USING POTABLE WATER.
- E. TESTING - AFTER THE MAINS HAVE BEEN FLUSHED, THE WATER MAINS SHALL BE TESTED AS OUTLINED BELOW:
 1. BEFORE APPROVING A MAIN FOR RELEASE, THE CITY UTILITY INSPECTOR SHALL TAKE AN INITIAL SET OF SAMPLES AND RE-SAMPLE AGAIN AFTER A MINIMUM OF **16 HOURS** USING THE SAMPLING SITE PROCEDURES OUTLINED. BOTH SETS OF SAMPLES MUST PASS FOR THE MAIN TO BE APPROVED FOR RELEASE.
 2. BEFORE APPROVING A MAIN FOR RELEASE, THE MAIN SHALL SIT FOR A MINIMUM OF 16 HOURS WITHOUT ANY WATER USE. USING THE SAMPLING SITE PROCEDURES OUTLINED AND WITHOUT FLUSHING THE MAIN, COLLECT TWO SETS OF SAMPLES A MINIMUM OF 15 MINUTES APART WHILE THE SAMPLING TAPS ARE LEFT RUNNING. BOTH SETS OF SAMPLES MUST PASS FOR THE MAIN TO BE APPROVED FOR RELEASE.
 3. A SET OF SAMPLES INCLUDES ALL SAMPLES COLLECTED ALONG THE LENGTH OF THE PIPELINE. FOR NEW MAINS, SETS OF SAMPLES SHALL BE COLLECTED EVERY **1,200 FEET** OF THE NEW WATERMAIN, PLUS ONE SET FROM THE END OF THE LINE AND AT LEAST ONE FROM EACH BRANCH GREATER THAN ONE PIPE LENGTH .
 4. EACH SAMPLE SHALL BE COLLECTED AND TESTED FOR BACTERIOLOGIC QUALITY AND SHALL SHOW THE ABSENCE OF COLIFORM ORGANISMS. TESTS SHALL BE PERFORMED BY A STATE HEALTH DEPARTMENT APPROVED LABORATORY.
 5. SAMPLES FOR BACTERIOLOGICAL ANALYSIS SHALL BE COLLECTED IN STERILE BOTTLES TREATED WITH SODIUM THIOSULFATE. IF THE LABORATORY RESULTS INDICATE THE PRESENCE OF COLIFORM BACTERIA, THE SAMPLES ARE UNSATISFACTORY AND DISINFECTION SHALL BE REPEATED UNTIL THE SAMPLES ARE SATISFACTORY.
 6. A SAMPLING TAP CONSISTS OF A CORPORATION STOP WITH METAL PIPE. THE CORPORATION STOP INLET SHALL BE MALE, 1 INCH IN SIZE, PURSUANT TO CHAPTER 7, SECTION 7.5. (UPON COLLECTION OF SAMPLING THE CONTRACTOR SHALL CONSTRUCT A PARTIAL WATER SERVICE, CHAPTER 7, DWG. 26, P. 46, OR MANUAL AIR RELEASE, DWG. 32, P. 52, COMPLETE AND READY FOR USE.)
- F. SAMPLES SHALL BE COLLECTED BY CITY PERSONNEL UPON PRIOR SCHEDULING BY THE CONTRACTOR WITH THE **CITY UTILITY INSPECTOR**. REPAIRS, CLEANING, DISINFECTING, FLUSHING, TESTING, OR SIMILAR OPERATIONAL ACTIONS SHALL BE IN ACCORDANCE WITH THE MOST CURRENT STANDARD ISSUED BY AWWA. (AWWA C-651)

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